

REMARKS/ARGUMENTS

The amendments set out above and the following remarks are responsive to the points raised by the Office Action dated June 2, 2006. In view of the amendments set out above and the following remarks, reconsideration is respectfully requested.

The Pending Claims

Claims 1, 3, 5, and 7 are cancelled, and claims 2, 4, 6, and 8 – 13 remain pending. Claims 2, 4, 6, 8, 10, 12, and 13 have been amended to describe the invention more clearly. Claim 2 is amended to include the limitations of claim 3, which is cancelled. No new matter has been added, and the basis for the amended claim language may be found within the original specification, claims and drawings.

The amendments to claims 2, 6, and 8 are supported at, for example, page 1, line 30 to page 2, line 14; page 4, line 28 to page 5, line 2. The amendments to claim 2 are supported at, for example, page 9, lines 31-33; page 10, lines 27-33; page 11, line 31 to page 12, line 7 of the specification. The amendments to claims 6 and 8 are supported at, for example, page 14, lines 21-22 and page 15, lines 9-14 of the specification.

Claims 4, 10, 12, and 13 have been amended to depend from claim 2.

The Office Action

Claims 1-4 and 10-13 were rejected under 35 U.S.C. § 102 as anticipated by U.S. Patent No. 5,968,848 to Tanabe et al. (hereinafter, “Tanabe ‘848”); U.S. Patent No. 5,792,274 to Tanabe et al. (hereinafter, “Tanabe ‘274”); U.S. Patent No. 6,068,000 to Tanabe et al. (hereinafter, “Tanabe ‘000”); and U.S. Patent No. 5,905,063 to Tanabe et al. (hereinafter, “Tanabe ‘063”.

Claims 1-4, 6, and 8-13 were rejected under § 102 as anticipated by U.S. Patent Application Publication No. 2004/0152608 to Hsu (hereinafter, “Hsu”); U.S. Patent No. 6,372,410 to Ikemoto et al. (hereinafter, “Ikemoto”); U.S. Patent No. 6,773,873 to Seijo et al. (hereinafter, “Seijo”); and U.S. Patent No. 6, 514,352 to Gotoh et al. (hereinafter, “Gotoh”).

Each of these rejections is separately and respectfully traversed.

Anticipation requires that the cited reference disclose each and every element of the claim (MPEP § 2131). In this case, each of the cited references fails to teach at least one

element or advantage of the presently amended claims. Accordingly, the anticipation rejection of the amended claims cannot be maintained.

Amended independent claim 2 recites a cleaning composition for removing KrF excimer resist or ArF excimer resist from a substrate including a copper film. The cleaning composition of amended claim 2 comprises an A component of a salt of hydrofluoric acid and a base not containing a metal; a B1 component of a water-soluble organic solvent that is a mixture of amides and polyhydric alcohol or its derivatives; a C component of at least one acid selected from the group of specifically recited acids; a D component of water; and an E1 component of an ammonium salt selected from the group of specifically recited ammonium salts.

The cleaning composition of amended claim 2 is particularly suitable for removing KrF excimer resist or ArF excimer resist from a substrate including a copper film. In particular, the mixture of amides and polyhydric alcohol or its derivatives (B1 component) has a high solubility for the KrF excimer resist or ArF excimer resist, and can therefore very effectively dissolve the KrF excimer resist or the ArF excimer resist (specification, page 9, line 31 to page 10, line 19). The cleaning composition of amended claim 2 also includes the specifically recited ammonium salts (E1 component), which suppress corrosion of the insulating film (specification, page 11, lines 25-26).

The anticipation rejection of amended claim 2 over Gotoh, Tanabe '274, Tanabe '063, Tanabe '848, Tanabe '000, Seijo, Hsu, and Ikemoto cannot be maintained. The specific combination of chemicals defined in amended claim 2 and their advantages are not disclosed in any of the cited references. For example, each of Tanabe '274, Tanabe '063, Tanabe '848, Tanabe '000, Seijo, and Hsu fails to disclose the ammonium salts specifically recited in amended claim 2 (E1 component). According to the Office Action, Tanabe '063 discloses an ammonium salt in claim 2. However, the ammonium salt recited in claim 2 of Tanabe '063 is an ammonium salt with a fluoride compound. Amended claim 2 of the present application requires an additional ammonium salt *besides* a salt of hydrofluoric acid and a base not containing a metal, as claimed. The Office Action also refers to paragraph [0009] of Hsu as disclosing an ammonium salt. However, Hsu does not disclose any of the specific ammonium salts recited in amended claim 2. Thus, because each of Tanabe '274, Tanabe '063, Tanabe '848, Tanabe '000, Seijo, and Hsu fails to disclose the ammonium salts

specifically recited in amended claim 2 (E1 component), the anticipation rejection of amended claim 2 cannot be maintained.

Additionally, each of Ikemoto, Tanabe '274, Tanabe '063, and Tanabe '000 fails to disclose a water-soluble organic solvent that is a mixture of amides and polyhydric alcohol or its derivatives (B1 component), as claimed in amended claim 2. None of Ikemoto, Tanabe '274, Tanabe '063, and Tanabe '000 discloses the specific selection of *both* an amide and a polyhydric alcohol mixed to create a solvent in a cleaning composition in combination with the other claimed ingredients, as claimed. As mentioned above, the mixture of amides and polyhydric alcohol or its derivatives (B1 component) has a high solubility for the KrF excimer resist or ArF excimer resist, and can therefore very effectively dissolve the KrF excimer resist or the ArF excimer resist. Accordingly, the anticipation rejection of amended claim 2 over each of Ikemoto, Tanabe '274, Tanabe '063, and Tanabe '000 cannot be maintained.

Moreover, none of the cited references disclose all of the advantages and actions performed by the individual components of the claimed cleaning composition. Gotoh, for example, does not disclose that the specific selection of a mixture of amides and polyhydric alcohols and or their derivatives has a high solubility for KrF or ArF resist, and can accordingly dissolve KrF or ArF excimer resist very effectively. Accordingly, the anticipation rejection of amended claim 2 over Gotoh cannot be maintained.

For the reasons set forth above, none of the cited references teach all of the elements and advantages of presently amended claim 2. Accordingly, the anticipation rejection of claim 2 cannot be maintained.

The anticipation rejections of amended independent claims 6 and 8 also cannot be maintained because none of Gotoh, Seijo, Ikemoto, and Hsu discloses all of the elements of amended independent claims 6 and 8. Amended independent claims 6 and 8 each recite a cleaning composition for removing KrF excimer resist or ArF excimer resist from a substrate including a copper film. The cleaning composition of amended independent claims 6 and 8 comprises an A component of a salt of hydrofluoric acid and a base not containing a metal; a B2 component that is a mixture of a sulfur-containing compound and polyhydric alcohol or its derivatives; a C1 component of 1-hydroxyl ethylidene-1,1-diphosphonic acid; a D component of water; and an E component of a base not containing a metal which is selected from the group of specifically recited bases. Amended independent claim 8 additionally

recites an F component of a copper corrosion inhibitor. Amended claims 6 and 8 each additionally recite the mass percentages of the A component, the C1 component, and the E component in the cleaning composition.

The cleaning compositions of amended claims 6 and 8 are particularly suitable for removing KrF excimer resist or ArF excimer resist from a substrate including a copper film. In particular, the mixture of a sulfur-containing compound and polyhydric alcohol or its derivatives (B2 component) has a high solubility for the KrF excimer resist or ArF excimer resist, and can therefore very effectively dissolve the KrF excimer resist or the ArF excimer resist (specification, page 13, line 28 to page 14, line 10). Additionally, the cleaning compositions of amended claims 6 and 8 include 1-hydroxyl ethylidene-1,1-diphosphonic acid (C1 component) and the specifically recited bases not containing a metal (E component), which suppress corrosion of the copper film and the insulating film (specification, page 14, line 30 to page 15, line 1). None of the cited references disclose all of the elements of the claims or their actions and advantages.

The anticipation rejection of amended independent claims 6 and 8 over Seijo, Hsu, Ikemoto, and Gotoh cannot be maintained. The specific combination of chemicals defined in amended claims 6 and 8 are not disclosed in any of the cited references. For example, each of Seijo, Hsu, and Ikemoto fails to disclose 1-hydroxyl ethylidene-1,1-diphosphonic acid, as claimed in amended claims 6 and 8. Because each of Seijo, Hsu, and Ikemoto fails to disclose 1-hydroxyl ethylidene-1,1-diphosphonic acid, the anticipation rejection of amended claims 6 and 8 over each of those references cannot be maintained.

The anticipation rejection of amended independent claims 6 and 8 over Gotoh likewise cannot be maintained. Gotoh does not disclose any of the bases not containing a metal specifically recited in amended claims 6 and 8 (E component). According to the Office Action, Gotoh discloses a base not containing a metal at column 4, lines 51-65. However, these are basic fluoride salts. Claims 6 and 8 require an additional base not containing a metal *besides* the salt of hydrofluoric acid and a base not containing a metal (the A component). The Office Action also cites column 5, lines 36-44 of Gotoh. However, amended claims 6 and 8 require a specific amount of the E component, and no specific amount of these compounds in column 5 is given. Thus, Gotoh fails to disclose the claimed E component, i.e., the base not containing a metal selected from the compounds specifically

recited in amended claims 6 and 8. Because Gotoh fails to disclose each and every element of amended claims 6 and 8, the anticipation rejection cannot be maintained.

For the reasons set forth above, each of the cited references fails to disclose at least one element or advantage of amended independent claims 2, 6, and 8. Since the independent claims are allowable for the reasons set forth above, the dependent claims are also allowable because they depend from allowable independent claims.

Conclusion

For the reasons set forth above, reconsideration is respectfully requested.

If, in the opinion of the Examiner, a telephone conference would expedite the prosecution of the subject application, the Examiner is invited to call the undersigned attorney.

Respectfully submitted,

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